NASA Glenn Research Center
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Administrator accepts *Columbia* accident report

NASA News Release

On August 26, NASA Administrator Sean O'Keefe received the report of the Columbia Accident Investigation Board (CAIB) from the chairman, retired U.S. Navy Admiral Harold Gehman. The following is a statement from the NASA Administrator regarding the CAIB report.

"On the day of the *Columbia* tragedy, NASA committed to the families of STS–107's crew that we would find the problems that caused this horrible accident, fix them, and return to the exploration objectives their loved ones dedicated their lives to. Today, we have completed the first phase of that important commitment."

"This morning, Admiral Hal Gehman presented the findings and recommendations of the CAIB. The members have established what they believe to be the probable cause of the accident and the factors that contributed to the tragic loss of *Columbia* and her courageous crew."

"I want to express NASA's appreciation for the Board's report, which is timely, thorough, and direct. The efforts of all concerned with the investigation will help NASA improve the Space Shuttle Program, our management processes, and our capability to safely return to flight."

"The findings and recommendations of

the CAIB will serve as NASA's blueprint. We have accepted the findings and will comply with the recommendations to the best of our ability. The Board has provided NASA with an important road map, as we determine when we will be 'fit to fly' again."

"Due to the comprehensive, timely, and open public communication displayed by the Board throughout the investigative process, we already have begun to take action on the earlier issued recommendations, and we intend to comply with the full range of recommendations released today."

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Glenn completes Phase I of NEXT project

BY DOREEN B. ZUDELL

With Glenn's successful completion of system integration testing of an ion propulsion system in August, the Nation is one step closer to being able to send science missions into far reaches of the solar system with much greater ease.

C-2003-582 Photo by Marvin Smith

Glenn NEXT team members (left) George Soulas (5430) and Hani Kamhawi (5880) prepare diagnostics for the ion thruster 2000–hour wear test in Vacuum Facility 6.

The testing was part of the NASA Evolutionary Xenon Thruster (NEXT) system, which uses xenon gas and electrical power to drive spacecraft. Last summer, NASA's Office of Space Science awarded Glenn approximately $4 million for a Phase I effort to design, build, and test initial

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Former Center Director Donald Campbell bids farewell. See page 3.

Inside

First African-American in space marks 20th anniversary


Dr. Bluford

Although it was 20 years ago, Dr. Guion S. "Guy" Bluford has vivid memories of his historic flight aboard STS-8 *Challenger*. It was the first space shuttle launch and landing at night and the first time an African-American flew into space.

With the cockpit dark, Bluford recalled, "…the clock counted down, and *Challenger* lifted off. I just laughed, it was so much fun," he said. Over the next 6 days, Bluford and the crew deployed a multipurpose Indian satellite, operated the Canadian-built Remote Manipulator System and a continuous flow electrophoresis system with live cell samples, and conducted medical measurements to understand the effects of space flight on the human body.

Bluford said his goal was never to be the first African-American in space. "I recognized the importance of it, but I didn't want to be a distraction for my crew," Bluford said. "I felt I had to do the best job I could for people like the Tuskegee Airmen, who paved the way for me, but also to give other people the opportunity to follow in my footsteps."

A veteran of four space flights, Bluford retired from NASA in July 1993. In the last 10 years he has managed the contracts of several companies supporting Glenn's microgravity research and technical development activities. He is currently president of the AeroSpace Technology Group, a business consulting organization specializing in aviation and space-related technology development.

In addition to his affiliation with numerous professional organizations, Bluford also serves on the Board of Directors of the Western Reserve Historical Society, the Great Lakes Science Center, and the National Inventors Hall of Fame Foundation. He has frequently lent his support to NASA Glenn educational programs and given inspirational talks for various events throughout the Cleveland metropolitan area. ◆

NASA chief scientist

Grunsfeld succeeds Lucid

Administrator Sean O'Keefe announced the selection of veteran astronaut, astronomer, and astrophysicist Dr. John M. Grunsfeld as the Agency's new chief scientist at NASA Headquarters. He succeeds Dr. Shannon Lucid, who will return to the NASA Johnson to assist the Agency's Return to Flight efforts.


Dr. Grunsfeld


Dr. Lucid

Grunsfeld, a veteran of four space shuttle flights, played an integral role in two space shuttle servicing missions to the Hubble Space Telescope. A native of Chicago, Grunsfeld has studied astronomy and physics throughout his career. He earned a bachelor's degree in physics from the Massachusetts Institute of Technology in 1980 and a master's degree and a doctorate in physics from the University of Chicago in 1984 and 1988, respectively.

As NASA's chief scientist, Grunsfeld will work to ensure the scientific merit of the Agency's programs. "John has a deep interest in astronautical science and has the hands-on experience to back up what he has taught in the classroom," said Administrator O'Keefe. "With his background in physics and astronomy, John is a natural selection to direct NASA's important space-based science objectives."

The Administrator noted appreciation for Lucid's leadership and work with Mary Kicza, assistant administrator for Biological and Physical Research, in developing a comprehensive plan for prioritization of research onboard the International Space Station. Lucid also updated NASA's science policy, which had not been done since 1996. The policy stipulates that science grants will be peer reviewed, and NASA scientists must compete for research funding. ◆

45 Years of exploration and discovery

Forty-five years ago this week, the 34th President of the United States, Dwight Eisenhower, signed into law the "National Aeronautics and Space Act of 1958," (Public Law 85-568), which created this historic agency.

Since that time, NASA has accomplished many great scientific and technological feats in air and space. The Agency has been adapted for many nonaerospace uses by the private sector and remains a leading force in scientific research and in stimulating public interest in aerospace exploration. NASA's exploration of space has taught us to view the Earth, ourselves, and the universe in a new way. While the tremendous technical and scientific accomplishments of NASA demonstrate vividly that humans can achieve previously inconceivable feats, we also are humbled by the realization that Earth is just a tiny "blue marble" in the cosmos.

Every member of the NASA family is encouraged to recognize and reflect on this important milestone. For 45 years the people of NASA have dedicated their lives and efforts to the pursuit of NASA's original mandate: Activities in space should be devoted to "peaceful purposes for the benefit of all mankind." ◆

NASA responds to CAIB Report

NASA News Release

As Administrator O'Keefe has pledged, we will not only implement the Columbia Accident Investigation Board's (CAIB) recommendations to the best of our ability, but we will also seek ways to set the bar even higher as we emerge from the *Columbia* accident as a safer, stronger and smarter Agency.

To do this, the "NASA Implementation Plan for Return to Flight and Beyond" outlines the path that NASA will take in implementing and building upon the CAIB's recommendations. The plan will also address the activities necessary to sustain safe flight operations for as long as the space shuttle's unique capabilities are needed in the future. Both the CAIB report and the Implementation Plan can be found on the NASA Web site at *http://www.nasa.gov*. Our Plan is not some kind of sacred text whose words are set in stone. It is a 'living document' that will be continually updated to reflect your good ideas for how we may best accomplish our return to flight goals, as well as to record our tangible progress toward safe return to flight.

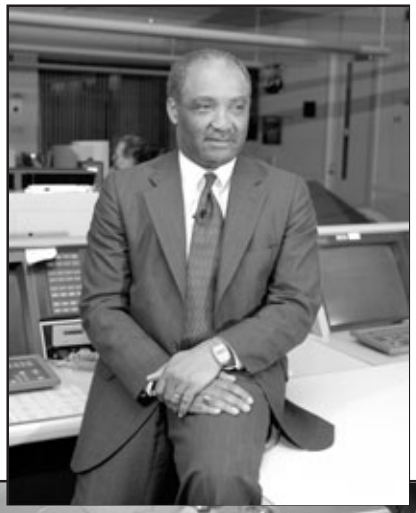
In the spirit of One NASA, we encourage all NASA employees to read both reports and provide us with your specific feedback. Submit your comments via email to *RTFsuggestions@nasa.gov*; directly to the co-chairs of the *Space Flight LeadershipCouncil@nasa.gov, Michael.Greenfield@nasa.gov, William F. Readdy@nasa.gov,* and *James.D.Halsell-1@nasa.gov,* or offer suggestions to any member of the NASA management team, as we will all be working together throughout the daily Return to Flight planning process.

With your help and support, we will embark on this new chapter in NASA's history with a renewed commitment to excellence in all aspects of our work, a strengthened safety ethos throughout our culture, and an enhancement of our technical capabilities. ◆

Correction: Funding for the John Glenn Biomedical Engineering Consortium was set at $7.5 million not billion. *(AF, September 2003, p. 1)*

Donald Campbell bids farewell

Fond memories of good people



As I look back over the last 9 plus years as director of Lewis Research Center and now Glenn Research Center at Lewis Field, it seems like only yesterday when I left Washington to come to Cleveland. The most fulfilling experience has been association with people who work very hard to make this one of the best Centers in the Agency. The dedication and commitment of personnel to the mission, vision, and core values of the Center has been the foundation for all of our achievements. Memories of my association with all of you will remain with me forever. My prime objective throughout my tenure has been the welfare of the workforce. My goal has been to continue to have at least 3500 employees come through the gates every day to do meaningful research and technology development for NASA. I am very proud of each and every one of you.

While at Glenn, I have seen this Center make great strides in propulsion and power technology for aeronautics, aerospace, and space applications. Our gas turbine engine propulsion technologies, which were the foundation for the creation of the Center, have resulted in significant advancements in engine

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Thomas named ISS program scientist

Dr. Thomas

Cleveland's own Dr. Donald A. Thomas has become the new International Space Station program scientist for NASA. Thomas succeeds Neal Pellis, who became associate director, Biological Sciences and Applications Office at NASA Johnson.

Based at Johnson, Thomas will work with principal investigators and the station program office to ensure scientific and engineering requirements are clearly communicated among all participants and to the general public.

"Don has a unique and very diverse background, which makes him an excellent choice for this position," said Mary Kicza, associate administrator for the Office of Biological and Physical Research at NASA Headquarters. "His experiences as a materials science researcher in industry prior to joining NASA and his scientific and management accomplishments since becoming an astronaut will serve the Space Station Program extremely well, as we optimize the available research opportunities and move forward toward assembly and completion of the station." ◆

Air show extravaganza

The Cleveland National Air Show, NASA Glenn, and presenting sponsor Parker Hannifin Corporation presented the 2003 Centennial of Powered Flight Gala at the Renaissance Cleveland Hotel on August 29. John Stossel of ABC-TV hosted the prestigious event. The two keynote speakers were Astronaut Jim Lovell and former NASA Flight Director Gene Kranz, both of Apollo 13 fame. They remained in Cleveland for the air show, which took place from August 30 to September 1 at Burke Lakefront Airport. Glenn played a major role in the proceedings with former Center Director Larry Ross (1990 to 1993) who was air show chairman.

C-2003-1466 Photo by Chris Lynch

Pictured above, NASA contributed exhibits, airplanes, and personnel to the outreach effort at the Cleveland Air Show. NASA engineer Tom Ratvasky (5840) speaks to some interested guests. A 1902 Wright glider replica and inflatable space shuttle are in the background.

Alumnus honor

Campbell

Ohio State University has named Glenn's former Center Director Donald Campbell, who now leads NASA's Special Projects Office for Nuclear Power Systems, 2003 Distinguished Alumnus. The award is presented annually to alumni of the College of Engineering in recognition of their distinguished achievements and eminent contributions to the advancement of their profession.

C-2003-1468 Photo by Quentin Schwinn

Pictured left to right: Senator John Glenn; Glenn's former Center Director Donald Campbell; Annie Glenn (seated); Dr. Riti Singh and Val Singh of Cranfield University, UK; Michelle Whitlow; and NASA Kennedy Deputy Director Woodrow Whitlow celebrated in style at the gala.

C-2003-1467 Photo by Quentin Schwinn

Aviation's best

From August 31 to September 5, Glenn hosted prestigious guests at the Sixteenth International Symposium on Air Breathing Engines (XVI ISABE) at the Renaissance Cleveland Hotel. The event welcomed aviation scholars and business leaders from around the world. Twenty-six countries were represented and over 350 participants shared the history of and future vision for air-breathing engines. Pictured left is Glenn's former Center Director Donald Campbell, who gave a presentation on the future of NASA.

Heart walk

Team NASA recently participated in the 2003 Cleveland American Heart Walk. This year, approximately 20 team members (civil servants and support service contractors) raised a total of $2,311.50 for heart disease and stroke. This helped contribute to the $223,853 that the greater Cleveland area raised for the American Heart Association. Team NASA came in 11th out of 98 teams in the Heart Walk. Pictured, left to right, are some of the NASA Glenn participants Alice Martinez (LESA), Jill Tobin (7150), Erline Trsek (7130), Traci Morris (SHS/0400), Tim Schilens (AKAC/7450), and Patricia Fordosi (7521).

Photo by Doreen Zudell

A decade of accomplishments, challenges, and change

Continued from page 3

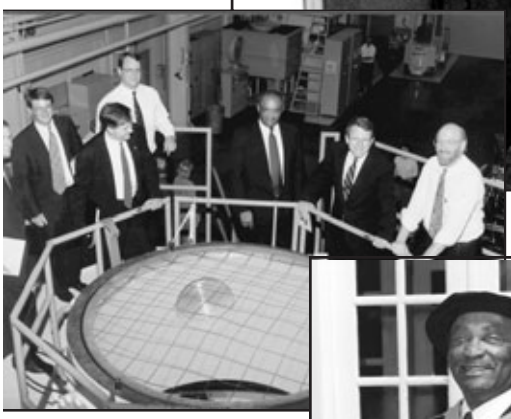
performance, noise, and emissions technology, and a reputation in the national and international propulsion community as a leader in civil aircraft propulsion. We have made significant progress in advanced material and structures technology to make engine components stronger, lighter in weight, and able to withstand high temperatures, resulting in more fuel-efficient aircraft.

The Deep Space I satellite was powered by a Glenn-developed ion engine. The engine was originally conceived at the Center in the 1960s, and diligent efforts brought this innovative tech-nology to maturity from a prototype on the test bench to a fully operational system. The Advanced Communications Technology Satellite, for example, demonstrated that we are fully capable of taking a technology program from concept to fully operational hardware. Icing research at Glenn is world class, and other aeronautics safety efforts at the Center have made aviation safer. We also have a long history of successful microgravity flight activities. This is only a thumbnail sketch of the numerous success stories of this Center.

I am grateful to all the people who work behind the scenes in the test cells, making sure these top notch facilities are operational and in excellent condition at the Cleveland campus and Plum Brook Station. Without you, we could not have met our commitments to our many internal and external customers. Also, the Center's other support organizations have been vital in helping us accomplish our mission as well, and I am grateful for your contributions.

Also, I am extremely proud of the rewards and recognitions this Center has earned. Glenn continues to lead the Agency in the number of *R&D* 100 and Turning Goals Into Reality awards. Awards such as these reaffirm that our efforts are valued both inside and outside of NASA.

This past decade has been one of change, and I anticipate the next decade will bring even more. For us to remain critical and relevant, we must accept that the Agency will continue to evolve. The Center has to be proactively prepared to meet the needs of NASA and the Nation's aeronautics and space initiatives and goals with emphasis on Return to Flight. In the future, our aeronautics program can develop the propulsion technology to power supersonic civil aircraft, and microgravity programs that will evolve into bioscience and bioengineering. The space nuclear power and propulsion programs are the key for robotic and human space flight to the outer planets. And last but not least, continued development of the Glenn workforce will be important to meet these future challenges.



As stated above, during my tenure I have gotten to know many of you personally and have enjoyed working with each and every one of you. Please know that I will always have fond memories of the good people of this Center and of your outstanding contributions.

I am confident that Glenn Research Center is in good hands under the capable leadership of Dr. Julian Earls. Julian is committed to the Agency, and I know he will have a positive impact on the Center.

Thanks to all of you for a great ride during my tenure as your director. ◆

Glenn's Wright connection

C-1943-1562

Pictured left: Orville Wright, third from left, during a 1943 tour in the Engine Research Building. Also pictured is, left to right, Col. Edwin Page, Army Air Corp; William Durand, NACA; and Addison Rothrock, deputy AERL executive engineer.

Pictured below: Randall Furnas proudly displays a Wright Flyer and a portrait of his cousin, Charley Furnas.

Orville Wright recognized value of Cleveland laboratory

BY DOREEN B. ZUDELL

Glenn employees may not be aware that Orville Wright was a guest here at the 1943 dedication of NASA Glenn's predecessor—Aircraft Engine Research Laboratory (AERL), only 40 years after the Wright Brothers' first successful airplane flight at Kitty Hawk, NC.

According to historical accounts, this was the first time that members of the National Advisory Committee for Aeronautics (NACA) visited the Cleveland laboratory. Wright was a NACA member from 1920 to 1948. In addition to participation in the dedication ceremony, Wright and other distinguished guests met with AERL Manager Edward Sharp and toured six major facilities within the laboratory.

In the May 21, 1943, edition of the AERL's newsletter, *Wing Tips*, Wright expressed his support of the laboratory. In the newsletter article, Wright was described as a gracious and friendly person, who, though "elderly now," was still very much in tune with progress in aviation.

When asked what the Cleveland facility meant to him, Wright said, "I am most interested in the laboratory. The work you are doing is important—vitally important. There is a great need for improvement of motors—which can only be accomplished by working out experiments. It calls for exact mathematical formulas and scientific study."

Later that year, Wright returned to the laboratory when the National Inventors' Council met to discuss the best inventions and ideas submitted during the past month toward the war effort. *Wing Tips* reported that Wright was "very impressed with the developments being carried to completion at AERL." When asked about the helicopter, he said that he believed it "was slated to advance to outstanding usefulness."

While archival records do not indicate how many times Wright visited the Cleveland laboratory, retiree Irene Guy, who served in the Executive Engineer's Office and later as Sharp's secretary, recalled that Wright visited the lab at least once a year for NACA meetings.

It is evident that Wright's support and presence were a great inspiration to this Center's founders. ◆

Furnas linked to "first passenger"

BY S. JENISE VERIS

After nearly a year of activities commemorating the Centennial of Flight, most people know that the Wright Brothers were responsible for the first powered, piloted airplane flight. But what about the first airplane passenger? That distinction is proudly preserved in the history books under the name of Charles W. Furnas, a distant cousin to Randall Furnas, Glenn's Director of Engineering and Technical Services.

"Charley and my father were second cousins—their grandfathers were brothers," Furnas explained. "I learned about Charley 20 years ago, after my father became interested in the Furnas family genealogy and shared information he recalled from his youth and from old newspapers he had saved."

From published accounts of Charley's life, his return to Dayton in 1908 proved to be the opportunity of a lifetime—for all.

Charley had been a machinist mate in the Navy and in January 1908 took a job in a machine shop within walking distance of the Wright Brothers' bicycle shop. Most of Charley's spare time was spent doing odd jobs at the Wrights' shop in hopes of convincing them to teach him how to fly. This was 1 month before the Wright Brothers won a bid submitted to the U.S. War Department under Specification No.

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Photo by S. Jenise Veris

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486, for a "heavier-than-air flying machine" able to carry two men. This design required considerable work and adaptation of their 1905 Flyer to their new Flyer A configuration. The brothers were also under contract to deliver another plane to a French business group, La Compagnie General de Navigation Aerienne, which planned to manufacture and sell Wright Aircraft.

Pinched for time to meet the two flight demonstration deadlines, the Wrights seized the opportunity to hire this energetic young man as a part-time assistant to Charles Taylor their full-time mechanic. Then, to get away from distractions, and regain their flying skills, the Wrights decided to ship their Flyer to Kitty Hawk in April 1908. Furnas followed his dream and the Wright Brothers to Kitty Hawk to help rebuild the neglected test camp, even though the Wright Brothers were on a tight budget and couldn't afford to pay his travel.

On May 14, after numerous runs, Orville decided "it was time to replace the bag-of-sand passenger with a real one," Furnas explained. "Because they were concerned the engine might overheat under the weight of two people if allowed to run a long time, they offered the passenger seat to Charley who could also monitor the engine. So, Wilbur operated the airplane and Charley operated the engine, making him not only the world's first airplane passenger, but also the world's first flight engineer."

Charley's contributions to flight were memorialized on a 6-cent air mail envelope issued by the U.S. Post Office in May 15, 1938, and more recently on a plaque to be placed along the National Aviation and Space Exploration Wall of Honor leading to the National Air and Space Museum, Udvar-Hazy Center, at Dulles International Airport.

While Furnas has been a longtime model-rocket-building enthusiast, he says that he never had aspirations to be a pilot, even though his sister has her pilot's license and his dad was a fighter pilot in World War II. "Though my brief tenure as a research engineer for Zero-G flights onboard the Lear Jet was much safer than what Charley did, I am confident that Charley would find my career as a NASA engineer and manager to be quite exciting as well." ◆

Well-wishes for Whitlow

On August 28, Glenn hosted a farewell reception for Dr. Woodrow Whitlow, Jr., the Center's highly regarded Research and Technology director, that he will long remember as he takes the helm of deputy center director at Kennedy Space Center in Florida.

Dr. Whitlow, far left, surrounded by a crowd of well-wishers at his farewell reception.

Crowds of well-wishers from near and far gathered at the Visitor Center to acknowledge Whitlow's contributions—as a colleague, a mentor, and a friend—during his 5-year tenure at Glenn.

Center Director Donald Campbell gave a heartfelt welcome speech, which was followed by some fun-loving comments by Deputy Director Dr. Julian Earls, who served as the master of ceremonies. A series of presentations by NASA personnel, industry and academic associates, and personal friends provided humor and sentiment to the well-attended event.

In closing remarks, Whitlow thanked everyone who attended, along with special thanks to those who had been particularly important in his life. The former R&T director expressed the feelings that his achievements were due less to what he knows, than to the talented people he knows who can get the work done. ◆

NEXT system integrated at Glenn

Continued from page 1

components of a next-generation ion propulsion system. The NEXT system falls within the NASA In-Space Propulsion Technology Program, which is managed by Marshall Space Flight Center.

The system consists of three main components: engineering model thrusters, a breadboard propellant management system, and a breadboard power processing unit.

"While the two breadboard units were constructed offsite by Boeing and Aerojet, the thrusters were designed and built in-house at Glenn," said Project Manager Scott Benson, Space Flight Project Branch. "The entire system was integrated at Glenn."

Benson explained that the Glenn technology team, led by Michael Patterson, Onboard Propulsion Branch, met all the Phase 1 objectives to build, demonstrate, and evaluate the technology.

This validated system technology enables the project to move forward into Phase II, which will advance the NEXT ion propulsion system technology to the next level of maturity through increasingly complex design, fabrication, and testing. Phase II is planned for a duration of 2 1/2 years, with a total award of over $20 million.

"The concerted efforts of engineers and technicians from 5000, 6000, 7000, and 8000 directorates provided the foundation for our Phase I accomplishments," Benson said. ◆

2003 Distinguished Publication award

Dr. Jayanta Panda, Nozzle Branch, and Dr. Richard Seasholtz, Optical Instrumentation Technology Branch, both members of the Research and Technology Directorate, have been awarded the 2003 Glenn Distinguished Publication award. Their publication is entitled *Experimental Investigation of Density Fluctuations in High Speed Jets and Correlation with Generated Noise.*

Dr. Panda

Dr. Seasholtz

One of the critical issues for supersonic transport is the high noise level produced by engine plume. The precise source of this noise is a debated subject primarily due to a lack of reliable experimental data. In this work turbulent density fluctuations in model supersonic jets were measured using a novel Rayleigh scattering based technique, developed at Glenn. The turbulent fluctuations were then correlated with the emitted noise to determine the noise source. The results should lead to an enhanced understanding of the fundamental physics of noise generation and mixing. They should also provide aeroacoustics researchers more accurate and comprehensive experimental data to calibrate and validate their analytical and computational models. ◆

CFC 2003 campaign hopes to accomplish great things

Each year Federal employees and military personnel raise millions of dollars through the Combined Federal Campaign (CFC), which benefits thousands of nonprofit charities. Last year, the NASA family at Glenn donated over $385, 000 to the needs of many—in our city, nationally, and around the world.

This year's CFC theme is "When caring hearts meet willing hands, great things are accomplished." The campaign runs through October 31 and hopes to raise $362,000.

"The 2003 Glenn CFC committee would like to thank employees for your generosity in the past and we look forward to your continued support in this year's campaign," said CFC Chairperson Robert Everett, Research Model Technology Branch. "Your contributions mean meals for hungry children, relief for families in need of counseling, further work on cures for diseases, comfort for the dying, environmental protection, and better lives and renewed hope for millions in our global community."

Payroll deductions make it convenient for employees to give by enabling them to spread their contributions across the entire year. Contributions are tax deductible and begin in January 2004.

This year it is more convenient than ever to give. Simply visit the CFC Web site by typing CFC into the transport box of the Glenn home page. There you will find information on this year's listing. Each of these organizations meets the Office of Personal Management guidelines for inclusion in the CFC.

"Please take the time to view the guide and determine the charitable organization or organizations to which you wish to donate," Everett said. "Through designation, you ensure that your donation goes to meet those needs that you feel are most important." ◆

CAIB report

Continued from page 1

"Our 'Return to Flight' efforts are being led by NASA's Associate Administrator for Space Flight William Readdy and our Associate Deputy Administrator for Technical Programs Dr. Michael Greenfield. They will work closely with the independent Return to Flight Task Group, led by retired U.S. Air Force Lieutenant General and former Apollo commander Thomas P. Stafford and former space shuttle commander Richard O. Covey. The 'Stafford-Covey Task Group' will independently assess every action NASA takes, as we return to flight operations."

"As an important step to change the culture of the Agency, we have created the NASA Engineering Safety Center (NESC) at the Agency's Langley Research Center in Hampton, VA, to provide comprehensive examination of all NASA programs and projects. The NESC will provide a central location to coordinate and conduct robust engineering and safety assessment across the entire Agency. The NESC will play a key role in ensuring we return to flight safely and sustain a high level of engineering and safety excellence for every NASA program."

"The independent CAIB performed an important service for the Nation, for NASA, and for the dedicated families of *Columbia's* crew. The Board members conducted a thorough and comprehensive review of the mission and the entire Space Shuttle Program. The Board's efforts to perform a timely and a complete investigation into the technological, engineering, managerial, and human aspects that contributed to the accident are nothing short of heroic in nature. We are grateful for their dedication."

To review CAIB recommendations on the Internet, visit http://www.caib.us/news/report/default.html. ◆

See page 3 for information on the "NASA Implementation Plan for Return to Flight."

Magazine grants awards to Glenn

An independent judging panel and the editors of *R&D Magazine* named six new products developed at Glenn among the top 100 most technologically significant products introduced into the marketplace over the past year. These innovations and the pioneering efforts of the inventors and collaborators will be recognized during the 41st annual *R&D* 100 Awards program on October 16 at Chicago's Navy Pier.

● The Microgravity Analysis Software System (MASS), developed by a team from Glenn's Microgravity Environment and Telescience Branch, operates on a continuous basis to receive the various streams of acceleration data generated onboard the International Space Station. The data is processed, tested for validity, and used for calculating meaningful data plots, which are posted to the Web in real time for users. MASS team members include NASA's Kevin McPherson and Ted Wright with Ken Hrovat, Eric Kelly, Gene Liberman, Nissim Lugasy, and Tim Reckart of Zin Technologies.

● A high-temperature solid lubricant composite that provides low friction and wear to sliding contacts operating from subambient to 1500 °F was developed and tested by Glenn's Dr. Christopher Dellacorte (5960) and Brian Edmonds (7410). Available as a plasma spray coating (PS300) or as a freestanding powder metallurgy product (PM300), these lubricant products have been fully commercialized for high-temperature steam valves and as bushings for furnace conveyors.

● Pilots can retrieve weather information using the WSI InFlight system, which graphically displays both radar and airport condition data on portable or panel-mounted displays in the cockpit. The prototype hardware and software was developed by ViGYAN, Inc. of Hampton, VA, as the Pilot Weather Advisor™ (PWA). Development of this product from the PWA into the WSI InFlight system was facilitated under the NASA Small Business Innovation Research Program and advanced to production with the aid of Glenn Lindamood from Glenn's Engineering Design and Analysis Division and Center funding.

● A new thermosetting polyimide resin, DMBZ–15, jointly developed by Glenn's Dr. Kathy Chuang with Maverick Corporation of Blue Ash, OH, may extend the life of aircraft engine components, space transportation propulsion systems, missiles, and hot airframe structures. The new resin exhibits better wear resistance than state-of-the-art PMR–15 and enables the development of fiber-reinforced polymer matrix composites with capabilities for use at temperatures as high as 650 °F—an increase of more than 100 °F above the state-of-the-art composites.

● A fault-tolerant, high-temperature, high-load radial magnetic bearing that incorporates such innovative features as a modular C-core stator construction, optimized rotor/lamination assembly, and new coil winding and core manufacturing approaches has resulted in the application for two patents. The new bearing has demonstrated a static 1000 lb force at 25,000 rpm or while operating fault-tolerant, at 1000 °F. The award winning bearing was developed by a team from Glenn's Structures and Acoustics Division supported by the Army Office and the University of Toledo including Gerald Montague (0300), Andrew Provenza, and Albert Kascak (0300), Mark Jansen (UNT), Ralph Jansen (UNT), and Ben Ebihara (UNT), a NASA retiree, as well as Dr. Alan Palazzolo, from Texax A&M University.

● The Hybrid Anti-Icing System is the first new form of ice protection for aircraft in 40 years and the first system certified by the FAA that incorporates an electromechanical deicer and uniquely combines electrothermal anti-icing with electromechanical deicing to protect roughness-sensitive airfoils. The new system operates at 25 percent of the power of current systems while providing the same level of safety for operations in icing conditions. Glenn's Dean Miller and Andy Reehorst (5840) were collaborators on the system that was manufactured by Cox & Company, New York, NY, and is a hybrid using thermal anti-icing and mechanical deicing to keep wings and other lifting surfaces clear of ice. The system is currently in production for Raytheon Aircraft's new Premier I business jet. ◆

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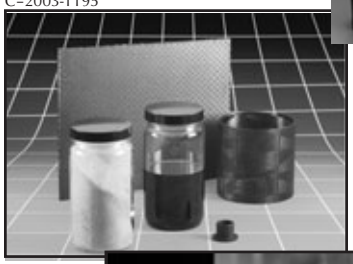
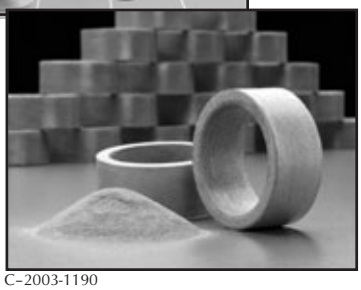
C–2003-1195





C–2003-1190

Pictured are four of the six R&D *100 award-winning technologies. From the top: Microgravity Analysis Software System; Vigyan Pilot Weather Advisor/WSI, Inc. Inflight; DMBZ-15 high-temperature polyimide; and PM 304 oil-free bushing and lubricant. For more information on all the* R&D *100 awards, visit http://www.rdmag.com/scripts/awards.asp*

Photos by Marvin Smith

People

Awards

NASA was a major contributor both professionally and financially at this year's National Technical Association (NTA) National Conference and Technical Career & Opportunity Fair held September 12 to 15 in . Four Glenn employees were honored for their technical excellence and mentorship of minority youth and women during the Technical Achiever of the Year Awards Banquet. They include scientist Dr. Jon Freeman (5600); physicist Dr. John Foster (5400); technologist Dr. Dexter Johnson (5900); and engineer Dr. Rickey Shyne (5800). NTA president Frank Robinson (8100) welcomed Associate Deputy Administrator for Institutions and Asset Management James Jennings and Associate Administrator for Education Dr. Adena Loston, who, along with NASA personnel from Glenn and Langley helped to make the event successful.

Dr. Freeman

Dr. Foster

Dr. Johnson

Dr. Shyne

In Memory

Anzic made his mark

Godfrey "Art" Anzic, 66, an electronics engineer in the Antenna, Microwave and Optical Systems Branch, suddenly died after suffering a cerebral hemorrhage.

Anzic joined NASA Lewis in 1963 and made noteworthy contributions throughout the years. He was instrumental in the design and development of the first U.S. high-power super-high-frequency ground terminal and the successful completion of the United States-Russia Telemedicine Space Bridge. He was also responsible for the initial design of NASA's Advanced Communications Technology Satellite Ground Terminal. In recognition of his outstanding contributions to NASA, he was recently awarded NASA's Exceptional Service Medal.

Anzic graduated from John Carroll University in 1960, where he received a bachelor of science degree in Physics/Electronics. Prior to coming to NASA Glenn, Anzic served with the U. S. Army as a Communications Officer in Fort Eustis, VA, and Camp Casey, Korea until 1962.

Anzic

Anzic, was an amateur radio operator known by the call letters K8BVI and S57BA. He designed an antenna circuit for the Shuttle Amateur Radio Experiment (SAREX). He also played a critical role in the transmission and reception of the first amateur television signals between Earth and the space shuttle in low Earth orbit.

William Harris, 77, who retired in 1944 with 33 years of service, recently died. While at Glenn, he worked as a plumber and pipefitter.

Edward Myslinski, 81, who retired in 1970 with 25 years of service, recently died. He worked as an electrician at Plum Brook Station and received the Apollo Achievement award for his services as a member of the team culminating Apollo II's successful landing.

Exchange Corner

● The 6th Annual Halloween Party will be held on Friday, October 31, from 2 to 3 p.m. in the Main Cafeteria. Prizes will be awarded for the best costume. Fun, food, and other prizes too!

● The Bath & Beauty Collection sale will be held on Wednesday and Thursday, October 22 and 23, in the Main Cafeteria upper section from 10 a.m. to 2 p.m. The sale offers great savings off regular retail prices. The Bath & Beauty Collection is a Reader's Digest Company. Books Are Fun, another Reader's Digest Company, has conducted the Books Are Fun book fairs for over 10 years.

● The annual Thanksgiving Dinner Special will be held on Thursday, November 20. Thanksgiving dinner will be served in the Main and DEB cafeterias from 11 a.m. until 2 p.m.

● As the holidays approach let the Exchange help you plan and cater your holiday events. The Deli and Catering Department can help you plan your next party. For more information, call Becky Tinlin at 216–433–5534.

AeroSpace Frontiers is an official publication of Glenn Research Center, National Aeronautics and Space Administration. It is published the first Friday of each month by the Community and Media Relations Office in the interest of the Glenn workforce, retirees, government officials, business leaders, and the general public. Its circulation is approximately 6700.

Editor.....Doreen B. Zudell
InDyne, Inc.
Assistant Editor.....S. Jenise Veris
InDyne, Inc.
Managing Editor.....Lori J. Rachul

DEADLINES: News items and brief announcements for publication in the November issue must be received by noon, October 17. The deadline for the December issue is noon, November 14. Submit contributions to the editor via e-mail, doreen.zudell@grc.nasa.gov, fax 216–433–8143, phone 216–433–5317 or 216–433–2888, or . Ideas for news stories are welcome but will be published as space allows. View us online at http://AeroSpaceFrontiers.grc.nasa.gov.

News Notes

Centennial of Flight: First Flight Centennial Celebration

The Centennial of Flight celebration will come to a close on the same sand dunes that witnessed the first flight 100 years ago. The First Flight Centennial Celebration will take place from December 12 to 17 in Kitty Hawk, NC. This exciting event will include celebrities and aviation heroes from across the country and will culminate on December 17 with a reenactment of the first heavier-than-air powered flight. Information about the celebration is available online at *http://www.firstflightcentennial.org/index.html*.

LESA MEETING: LESA/IFPTE, Local 28, will hold its next monthly membership meeting on Wednesday, October 8, at noon in the Employee Center, room 101.

SATELLITE VIDEO CONFERENCES: The Learning Center, Organizational Development and Training Office, is sponsoring two satellite video conferences. On October 14, Peter Senge will speak on "Strategy and Systems Thinking" and Rosabeth Moss Kanter on "The Keys of Leading and Managing Change," with a post-broadcast discussion led by Dan Gauntner, deputy chief, Systems Engineering Division. On October 27, Larry Bossidy will speak on "Execution." For further information, contact 216–433–2996 or 2997.

DISABILITY AWARENESS: This year's Disability Awareness Month theme is "America Works Best When All Americans Work." In recognition of this, Glenn's Equal Opportunity Program Office will host a Disability Education Fair in the Main Cafeteria's upper level on Tuesday, October 21, from 10 a.m. to noon. Disability related organizations and vendors will provide educational materials to share with all employees.

PBS REACTOR UPDATE: Plum Brook Station (PBS) will hold its fifth annual Community Information Session (CIS) on Tuesday, October 21 to update the public on progress in the PBS Reactor Facility Decommissioning Project. The CIS will be held from 7:30 to 9:00 p.m. in the cafeteria of
and will premier a documentary video that details the history of the Reactor Facility from 1962 to 1973.

AFGE MEETING: AFGE Local 2182 will hold its next monthly membership meeting on Wednesday, November 5, at 5 p.m. at , 25912 Lorain Road, North Olmsted. All members are encouraged to attend.

***Realizing the Dream of Flight Symposium*, November 5, Great Lakes Science Center**

This 1-day Symposium, from 8 a.m. to 4 p.m., will delve into the life stories of 12 important aerospace pioneers of the past 100 years. The biographical profiles will include a broad range of perspectives and backgrounds, with pioneers from the aeronautics world, the world of space exploration, and several individuals who bridge both realms. This is a free event but due to limited seating pre-registration is required by contacting *mdb@historyenterprises.com*. Glenn is allotted seating for 75. Visit the Realizing the Dream of Flight Web site at *http://history.nasa.gov/rdfconf/index.html* for information on the topics and speakers.

Behind the Badge

a closer look at our colleagues

Monice Jungbluth

Job assignment: I am the Human Resources (HR) manager for InDyne, Inc.'s MOC–1 contract.
Time at NASA: I have worked for InDyne at NASA for about 3 years.
Hometown: I was born in Youngstown and currently reside in .
Describe your family: I have an 11-year-old son, Evan, who was born in Houston, TX, and is in the fifth grade, and a 6-year-old daughter, Kyla, who was born in Anchorage, AK, and started first grade this year. We were fortunate to have the opportunity to experience living in and traveling to a variety of places with my previous employer. But now, we're quite happy to be closer to my hometown, where my mother and one of my brothers and his family live.
Favorite food: I love to experience different types of food, and tend to really enjoy seafood, Thai, and Mediterranean cuisines.
Favorite music: I enjoy all types of music but usually listen to rock or jazz.
Favorite movie or play: My favorite seems to change with every movie I see, but the classic *Gone With the Wind* still ranks high on my list. I also enjoy suspense thrillers.
Activities when away from NASA: I spend a seemingly endless amount of time on "kid" activities, from baseball to dance recitals, which I really enjoy. I also enjoy traveling and hope to be able to take my children back to their respective birthplaces. I also tend to be very family oriented and spend a good deal of time staying in touch and visiting my mother and five siblings, who are all scattered about the country.
What do you see as an area of expertise to be proud of at NASA? From my unique vantage point as the HR manager for a contractor, I see the expertise held by so many people who are "behind the scenes," yet who contribute significantly to mission success in each of their unique areas, and who should be proud every day of the significant contributions they make.

Kranz, Lovell visit

Gene Kranz, leader of the "tiger team" of flight directors who brought the Apollo 13 spacecraft safely back to Earth in 1970, addressed Glenn employees on August 29. A man who has truly lived his motto of "Failure is not an option," Kranz mesmerized a packed audience in the DEB auditorium with his memories as a flight director. His candid descriptions—along with the philosophies he lives by—of the early days of his 47-year career with NASA, were both inspiring and challenging to the Glenn workforce.

At a time when the Agency is recovering from the *Columbia* tragedy, Kranz urged that employees need to "take personal responsibility for the failure and go about making things right." He called for each employee to go out into the community and become a "foot soldier of space," spreading the word of NASA's value. "With every catastrophe comes opportunity," he said. "This is NASA's opportunity."

In nearby Parma, James A. Lovell, one of the astronauts who survived the fateful Apollo 13 mission, endured a less than life-threatening thunderstorm that delayed a park dedication ceremony in his honor.

The event was spearheaded by Parma's Ward 4 Councilman Tim DeGeeter who discovered that Lovell was born in Cleveland but raised on Farnsworth Avenue in Parma for a short time. This motivated DeGeeter and his supporters to claim one of America's heroes as their own Hometown Hero and to secure funding for the Captain James A. Lovell, Jr., Park adjacent to John Muir Elementary School. Lovell, accompanied by his wife, Marilyn, admitted to being overwhelmed by the gesture and outpour of admiring citizens and local dignitaries who came to witness the dedication. The veteran of four space flights also reminded the audience that he wasn't selected as an astronaut candidate the first time he applied. ". . . Just shows, if you really want to do something, you keep at it."

During the ceremony local artist Barb Matthes presented Lovell with a plaque she designed showing him on the Moon, the destination denied him by the ill-fated Apollo 13 mission. ◆

Pictured, below, left to right: Lovell graciously accepts a standing ovation led by Councilman DeGeeter along with Lovell's wife, Marilyn, and a host of other well-wishers.

Photo by S. Jenise Veris

C-2003-1456 Photo by Quentin Schwinn

Pictured, above, left to right: Director of Engineering and Technical Services Randall Furnas, Steve Wnuk (7565), and Dr. James Bridges (5940) with Kranz in the Aeroacoustic Propulsion Laboratory.

National Aeronautics and
Space Administration

John H. Glenn Research Center
Lewis Field
21000 Brookpark Road
Cleveland, Ohio 44135

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